CLAIMS

What is claimed is:

1. An apparatus for enhancing operation of wireless network environment, comprising

a plurality of directional antennas, wherein the peak gains of the plurality of antennas are offset relative to each other;

a switch operatively connected to the plurality of antennas and operative to switch between the antennas in response to control signals;

a detector operative to detect at least one signal attribute of the signals transduced the antennas; and

an antenna selection module operative, during receipt of the preamble of a wireless frame, to

provide control signals to the switch designating a selected antenna,

evaluate signal attributes provided by the detector,

select an antenna from the plurality of antennas for receiving the signal associated with the wireless frame.

2. The apparatus of claim 1 further comprising a radio module operatively connected to the switch for receiving signals from one of the plurality of antennas selected by the antenna selection module.

3. The apparatus of claim 2 wherein the radio module is operative to demodulate the received signals into digital data streams.

4. The apparatus of claim 2 further comprising a data link control unit operative to process the digital data streams and identify frames from the digital data streams.

5. The apparatus of claim 4 wherein the antenna selection module is further operative to identify the selected antenna to the data link control unit, and wherein the identified frames include a source address, and wherein the data link control unit is operative to store the identified antenna in association with the source address in the frames in a data structure.

6. The apparatus of claim 5 wherein the data link control unit is operative to

compose a frame for transmission to a destination,

retrieve the antenna identifier associated with the destination address in the data structure,

transmit control signals to the switch designating the retrieved antenna for use in transmitting the composed frame.

7. The apparatus of claim 5 wherein the data link control unit is operative to transmit a frame acknowledging the received frame.

8. The apparatus of claim 7 wherein the acknowledging frame is transmitted using the antenna selected to receive the frame.

9. The apparatus of claim 1 wherein at least one antenna is a patch antenna.

10. The apparatus of claim 1 wherein at least one antenna is a yagi antenna.

11. The apparatus of claim 1 wherein at least one antenna is a parabolic antenna.

12. The apparatus of claim 1 wherein the plurality of antennas are configured to maximize the coverage area provided by the plurality of antennas.

13. The apparatus of claim 1 wherein the plurality of antennas are configured to provide radio frequency coverage in all directions.

14. The apparatus of claim 1 wherein the switch, in a listen mode, is operative to switch between the antennas before a wireless frame is detected.

15. In a wireless network system comprising a plurality of directional antennas, wherein the peak gains of the antennas are offset relative to each other, a method comprising

detecting a signal transduced by one of the directional antennas, wherein the signal transmits a wireless frame, the wireless frame including a preamble;

during receipt of the preamble of the frame, selecting one from the plurality of the antennas based on at least one attribute of the respective signals transduced by the antennas;

switching to the selected antenna for receipt of the remainder of the frame.

16. The method of claim 15 further comprising

demodulating the signal to provide a digital data stream,

recovering a data packet from the digital data stream.

17. The method of claim 16 further comprising

transmitting an acknowledgement frame using the selected antenna.

18. The method of claim 15 wherein the signal is a frequency-division multiplexed signal.

19. The method of claim 15 wherein the signal is an orthogonal frequency-division multiplexed signal.

20. An apparatus for enhancing operation of wireless network environment, comprising

a plurality of directional antennas, wherein the peak gains of the plurality of antennas are offset relative to each other;

a switch operatively connected to the plurality of antennas and operative to switch between the antennas in response to control signals;

a detector operative to detect at least one signal attribute of the signals transduced the antennas; and

an antenna selection module operative, during receipt of the preamble of a wireless frame, to

provide control signals to the switch designating a selected antenna,

evaluate signal attributes provided by the detector,

select an antenna from the plurality of antennas for receiving the signal associated with the wireless frame; and

an orthogonal frequency division multiplexed (OFDM) module operative to

receive the signal from the switch,

and recover a digital data stream from the signal.